Claims

1. A wireless communication system, comprising a plurality of communication apparatuses, for dividing transmission data by a predetermined unit and effecting data transmission, characterized in that:

a communication apparatus of an information transmission source forms a data packet by inserting a preamble signal into each transmission data and transmits it; and

a communication apparatus being not currently communicating recognizes that the transmission path is used for a predetermined interval from when the preamble signal is detected.

2. The wireless communication system as claimed in claim 1, characterized in that:

the information transmission source communication apparatus forms a data packet at a predetermined time unit, and as well as inserts a preamble signal, and transmits it;

an information reception target communication apparatus generates ACK information in response to the success in correctly receiving the data, or generates NACK information in response to the failure in correctly receiving the data, forms an ACK or NACK packet to which a preamble signal is inserted, and returns it, just after the reception of the data packet;

said information transmission source communication apparatus retransmits the data packet of said predetermined time unit in response to the reception of the NACK packet; and

said communication apparatus being not currently communicating recognizes the use of the transmission path for retransmission on the basis of the reception of the preamble signal for the period from when the detection of the NACK packet to when the next ACK packet.

3. The wireless communication system as claimed in claim 2, characterized in that:

other communication apparatuses being not currently communicating recognize the termination of the use of the transmission path when the ACK packet cannot be detected on the basis of the detection of the preamble signal until a predetermined

5   elapsed from when the NACK packet is received.

4. The wireless communication system as claimed in claim 1, characterized in that:

the information reception target apparatus adds the preamble

10   signal to the top of a beacon signal describing information regarding the communication apparatus of which transmission is permitted with priority, and transmit it;

the communication apparatus specified by the beacon signal transmits a predetermined unit of data packet when there is data to be

15   transmitted to said information reception target apparatus;

other communication apparatuses being not currently communicating recognizes on the basis of the detection of the preamble signal the use of the transmission path for the time interval corresponding to the packet length from when said beacon signal is

20   received.

5. The wireless communication system as claimed in claim 1, characterized in that:

said information transmission source communication apparatus

25   transmits a transmission request packet (RTS) into which the preamble signal is inserted when no preamble signal is detected for a predetermined time interval; and

an information reception target communication apparatus returns a confirmation notice packet (CTS) in response to the

30   reception of a transmission request packet (RTS).

6. The wireless communication system as claimed in claim 5, characterized in that:

said other communication apparatus not currently

35   communicating recognizes on the basis of the detection of the

preamble signal the use of the transmission path from when the NACK packet is detected, during a predetermined interval from the reception of the confirmation notice (CTS) packet, to when the next ACK packet is detected.

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7. The wireless communication system as claimed in claim 5, characterized in that:

said information source communication apparatus makes the data packet include therein an element of the transmission request
10 (RTS) for the next data packet transmission when the following transmission data exists.

8. The wireless communication system as claimed in claim 5, characterized in that:
15 said information reception target communication apparatus makes the ACK packet or the NACK packet corresponding to the received data packet include an element of confirmation notice (CTS).

9. A wireless communication apparatus operating within a wireless
20 network constructed of a plurality of communication apparatuses, characterized by comprising:

buffer means for dividing transmission data by a predetermined unit;

transmission data processing means for adding a
25 predetermined preamble signal to the divided data to form a transmission packet;

preamble detection means for detecting a preamble signal on a transmission path; and

transmission means for transmitting the formed packet when
30 no preamble signal is detected for a predetermine interval at said preamble detection means.

10. The wireless communication apparatus as claimed in claim 9, characterized by further comprising:
35 reception means for receiving the signal added to the preamble

signal in response to the detection of the preamble signal and reception data processing means for analyzing the received information by said reception means.

11. The wireless communication apparatus as claimed in claim 10, characterized in that:

said reception data processing means generates ACK information in response to the correctly receiving a for-own-station data, or NACK information in response to incorrectly receiving the for own station data;

said transmission data processing means forms an ACK packet or an NACK packet into which a preamble signal is inserted; and

said transmission means transmits the ACK packet or the NACK packet just after the reception of the data.

12. The wireless communication apparatus as claimed in claim 11, characterized in that:

upon not currently communicating, said reception data processing means recognizes the use of the transmission path for the data retransmission from when the NACK packet is detected to when the next ACK packet is detected.

13. The wireless communication apparatus as claimed in claim 11, characterized in that:

said reception data processing means recognizes the termination of the use of the transmission path when no ACK packet is detected until a predetermined interval elapsed from when the NACK packet is received.

14. The wireless communication apparatus as claimed in claim 10, characterized in that:

said transmission data processing means generates a beacon signal describing information regarding the communication apparatus of which transmission is permitted with priority; and

said reception data processing means analyzes whether the

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transmission of its own station is permitted with priority by analyzing the beacon signal.

15. The wireless communication apparatus as claimed in claim 14, characterized in that:

upon not currently communicating, said reception data processing means recognizes the use of the transmission path for a time interval corresponding to the packet length from when the beacon signal is received.

16. The wireless communication apparatus as claimed in claim 10, characterized in that:

said transmission data processing means generates a transmission request (RTS) packet for the data transmission target;

or in response to the reception of the transmission request (RTS) packet from another communication apparatus by said reception processing means, said transmission data processing means generates a confirmation notice (CTS) packet.

17. The wireless communication apparatus as claimed in claim 16, characterized in that:

upon not currently communicating, said reception data processing means recognizes the use of the transmission path from when the NACK packet is detected, during a predetermined interval from the reception of the confirmation notice (CTS) packet, to when the next ACK packet is detected.

18. The wireless communication apparatus as claimed in claim 16, characterized in that:

said transmission data processing means makes the data packet include therein an element of the transmission request (RTS) for the next data packet transmission when the following transmission data exists.

19. The wireless communication apparatus as claimed in claim 16,

characterized in that:

said transmission data processing means makes the ACK packet or the NACK packet corresponding to the received data packet include an element of the confirmation notice (CTS) therein.

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20. A wireless communication method within a wireless network constructed of a plurality of communication apparatus, characterized by comprising:

a buffering step dividing transmission data by a predetermined
10   unit;

a transmission data processing step forming a transmission packet by adding a predetermined preamble signal to the divided data;

a preamble detection step detecting a preamble signal on the
15   transmission path; and

a transmission step for transmitting the formed packet when no preamble is detected for a predetermined interval at said preamble detection means.

20   21. The wireless communication method as claimed in claim 20, characterized by further comprising:

a reception step receiving the signal added to the preamble signal in response to the detection of the preamble signal, and

a reception data processing step analyzing information
25   received by said reception step.

22. The wireless communication method as claimed in claim 21, characterized in that:

in said reception data processing step, in response to the
30   success in correctly receiving data directed to own station, ACK information is generated, or in response to the failure in correctly receiving data directed to own station, NACK information is generated;

in said transmission data processing step, an ACK packet or an
35   NACK packet into which the preamble signal is inserted is formed,

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and

in said transmission step, the ACK packet or the NACK packet is transmitted just after the data reception.

5   23. The wireless communication method as claimed in claim 22, characterized in that:

upon not currently communicating in said reception data processing step, it is recognized that the transmission path is used for data retransmission from when the NACK packet is detected to when
10   the next ACK packet is detected.

24. The wireless communication method as claimed in claim 22, characterized in that:

in said reception data processing step, it is recognized that the
15   use of the transmission path is terminated when the ACK packet cannot be detected until a predetermined elapsed from when the NACK packet is received.

25. The wireless communication method as claimed in claim 21,
20   characterized in that:

in said transmission data processing step, a beacon signal describing information regarding the communication apparatus of which transmission is permitted with priority is generated; and

in said reception data processing step, it is analyzed whether
25   own transmission is permitted with priority by analyzing the beacon signal.

26. The wireless communication method as claimed in claim 25, characterized in that:
30   upon currently non-communicating, in said reception data processing step, it is recognized that the transmission path is used for the time interval corresponding to the packet length from when the beacon signal is received.

35   27. The wireless communication method as claimed in claim 21,

characterized in that:

in said transmission data processing step, a transmission request (RTS) packet for the data transmission target is generated; or

in said reception step, in response to the reception of a transmission request (RTS) packet from another communication apparatus, in said transmission data processing step, a confirmation notice (CTS) packet is generated.

28. The wireless communication method as claimed in claim 27, characterized in that:

upon currently non-communicating, in said reception data processing step, it is recognized that the transmission path is used from when the NACK packet is detected during a predetermined interval from the reception of the confirmation notice (CTS) packet to when the next ACK packet is detected.

29. The wireless communication method as claimed in claim 27, characterized in that:

in said transmission data processing step, the data packet is made to include therein an element of the transmission request (RTS) for the next data packet transmission when the following transmission data exists.

30. The wireless communication method as claimed in claim 27, characterized in that:

in said transmission data processing step, an ACK packet or an NACK packet corresponding to the received data packet is made to include therein an element of the confirmation notice (CTS).

31. A computer program described in a computer-readable format to execute on a computer system a wireless communication process in a wireless network constructed of a plurality of communication apparatus, characterized by comprising:

a buffering step dividing transmission data by a predetermined unit;

a transmission data processing step adding a predetermined preamble signal to the divided data to form a transmission packet;

a preamble detection step detecting a preamble signal on a transmission path;

5   a transmission step transmitting the formed packet when no preamble signal is detected at said preamble detection means for a predetermined interval;

a reception step receiving the signal added to the preamble signal in response to the detection of the preamble signal; and

10   a reception data processing step analyzing the information received by said reception step.